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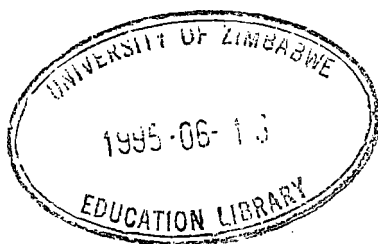
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The Relationship Between Work Space And Organisational Communication Efficiency: A Case Study Of Masvingo Education Region

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ABSTRACT

The study examined the effects of work space allocation of an education service organisation as related to its communication efficiency. Twenty Education Officers responded to a questionnaire on various aspects of the organisation's communication systems. The organisation's work space allocation impacted negatively on organisational communication efficiency both in terms of man-hour losses and perceived quality of the work environment. Recommendations for improvements on the work space allocation with a view to achieving better communication efficiency are made and possible training needs indicated.

Introduction

The management of communication is an important concern of any organisation. Amongst other things it should lead to greater organizational effectiveness and efficiency. Robbins (1991) distinguishes between effectiveness and efficiency as related to organisations. Organisational effectiveness is defined as the ability of the organisation to meet its set goals. Organisational efficiency on the other hand relates to the extent of cost savings that accompany the attainment of organisational goals. Thus, an organisation can be relatively effective in terms of achieving its set goals and yet being inefficient when process costs are considered.

With regard to the Education service sector, attempts at achieving communication efficiency have been demonstrated in several ways, including the circulation of communications procedures documents to all levels of office and staff. For example, Ministry of Education and Culture's policy circular 47/1986 seeks to clarify the communications "responsibility

of regional and other offices vis-a-vis Head office ... from the viewpoint of the correct channelling of written or oral communication and personal interviews" in line with "the complete decentralization to Regional Offices of the Ministry's functions relating the staffing operations and ... the day to day administration of schools." A Manual for Registry Users (1991) whose purpose is "to increase efficiency and effectiveness in the service provided by registries in the Regional and District Offices" has also been issued to regulate the handling of correspondence, files, as well as use of the telephone.

However, the communications strategies outlined by the policy documents operate within Regional work space layouts determined both by available office space and the administrative decisions pertaining to office allocation. In an important sense, therefore, work space allocation and use should impose certain constraints on perceived organisational communication efficiency.

The Problem and Its Setting

The study sought to determine whether the work space allocation of an education Service organisation was according to sound ergonomic principles with particular reference to the ergonomics of communication. By the ergonomics of communication is meant the efficiency with which information and decisions are made and passed up and down levels of decision makers and implementors. The contention is that certain organisation structures such as the location of levels or grades of staff within the physical facilities of the organisation such as offices, may hinder or facilitate internal organisation communication and therefore, its effectiveness. If organisation communication is not well managed, organisation goals may not be efficiently realised due to low worker motivation consequent upon frustrating decision making/implementing contexts (Seabrook, 1982; Steward, 1985).

This study was occasioned by a recent reallocation of Masvingo (Zimbabwe) Regional Education Offices whereby, the Education directorate and clerical staff moved from the New Government Offices to Wigley House about 650 metres away. The allocations were decided on and carried out by the Regional Education Administration.

Some Education Officers expressed the feeling that they should have been accommodated in the same block as the directorate for ease of communication with key decision makers in education since Education Officers are the key implementors of government education policy (Zhou, 1991). Such a view agrees with the current Ministry of Education and Culture's Regional Organisational Offices Structure.

The Regional Director of Education had a different view. His position on the issue was that since clerical staff handled and processed the documents that are the information base on which decisions are made, the clerical staff had to be housed within the same building as the directorate if the information flow within the department was not going to be compromised (Masango, 1991). To illustrate the point, the Regional Director gave the example that he may need to consult more often with Registry and Accounts Sections than with Education Officers for History.

The study, therefore, sought to determine Education Officers' opinions on how the recent reallocation of offices affected the ability to communicate among themselves and with the Education directorate as well as the perceived quality of the work environment. It also sought to quantify any man-hour losses consequent upon the practical communications demands of the new organisation layout.

Review of Literature

Recent advances in ergonomics theory (Miester, 1982; Hendrick, 1987; Karwoski, 1991) and applications (Steward, 1985, Pikaar, Leinor and Rynsdorp, 1990; Algera, Reitsma, Scholtens, Vrins and Wijnen, 1990; Hendrick, 1991) give us useful heuristic with which to explore the communications problem implied in the statement of the problem above.

Derived from the Greek words *ergon* (work) and *nomos* (natural laws), ergonomics rests on the premise that certain fundamental laws (or ergonomic principles) govern the efficient attainment of work.

Some important ergonomic principles are those of function, frequency-of-use, sequence-of-use, and importance (Troost, Visser and Williams, 1990; Blignaut, 1988). The functional principle postulates that equipment or work stations should be grouped on the bases of function. The sequence-of-use principle takes this proposition one step further to say that if components or subsystems are used in a fixed sequence, then

they should preferably be arranged in that order. The frequency-of-use principle says that components used most frequently should be placed in convenient positions. The importance principle asserts that components that are vital to the operational activity of a system should be most easily accessible. The study examined the extent to which the new work space allocation of the Masvingo Education Service organisation is perceived by key operatives in the system with regards to compatibility with the ergonomic principles of functionality, frequency-of-use and importance.

In the relatively short historical development of ergonomics as a discipline, the emphasis has been (and still is) largely on how to incorporate ergonomic principles into instrument or hardware design so as to make the hardware user friendly in terms of compatibility with human anthropometric and information processing capabilities (Grandjean, 1987; Blignaut, 1988). Issues of an atomistic nature such as the design of displays, controls and the regulation of noise, light and temperature levels were the main content of ergonomics practice. This orientation has been called the micro-ergonomic approach to achieving work efficiency (Hendrick, 1991; Karwoski, 1991; Blignaut, 1988).

Whereas micro-ergonomics remains an important concern of ergonomics practice, of late there has been a shift of focus from micro- to macro-ergonomic concepts and applications. The macro-ergonomic approach (Hendrick, 1987; Karwoski, 1991) examines organisational design from the holistic perspective of its overall efficiency as a socio-technical or ergonomic system. That way it is possible to apply ergonomic principles to the study of non-technical aspects of organisational design such as human-work environment interfaces. In this connection work space allocation and communication efficiency are important components of the structural features of organisational design, and work environment factors. As such they contribute to the efficiency of the ergonomic system.

Karwoski (1991), for instance, views an ergonomic system as referring to the human-environmental elements and all the interactions occurring amongst these in time. From this perspective, a basic goal of ergonomics is to investigate and remedy any ergonomic system's measurable inefficiency and consequent human losses related to the ergonomic system's undesirable entropy. By entropy Karwoski refers to the extent of deviation from the ideal ergonomic interactions that may contribute toward ergonomic incompatibility. Ergonomic incompatibility refers to

the failure of the ergonomic system to utilize ergonomic principles of operation as reflected in the system's measurable inefficiency associated with human losses.

The study considered human losses linked to the Education Service's work space allocation both quantitatively and qualitatively to encompass man-hour losses and the perceived quality of work life, respectively.

The structural aspects of organisations as systems such as their complexity, formalisation and centralisation have been recognised as closely related to organisational efficiency and effectiveness (Robbins, 1990 and 1991; Hendrick, 1991). Complexity refers to the degree of horizontal, vertical and spatial differentiation that exists in an organisation. Horizontal differentiation relates to the number of structurally same level subsystems in an organisation whereas vertical differentiation refers to the number of stratification levels or the depth of the organisational hierarchy. Spatial differentiation involves the degree of the physical dispersion of the location of an organisation's facilities and personnel. The more the same and other level subsystems, as well as dispersion of organisational facilities and personnel, the more complex is the organisation. Formalisation refers to the degree of standardization of the work of an organization, whereas centralisation encompasses the extent of dispersion of decision making capabilities so that in highly centralised organisations, decisions emanate only from the top hierarchy of the organisation. The relationship between organisational complexity, centralisation and formalisation is relatively ambiguous as it is mediated by such factors as the organisation's policies, its strategic (long term) and operational (short-term) goals and the socio-political environment in which it functions.

In terms of communication efficiency, however, the general proposition is that highly complex organisations require less formalisation and centralisation of communication than less complex ones (Robbins, 1991). In other words, it would be ergonomically incompatible to have highly complex organisations that are at the same time highly centralised and formal for the reason that it would be difficult to have decisions made and implemented. The organisation would tend to be relatively inefficient.

The Education Service under study is a relatively complex structure. This study, in part, addressed the question of whether Education Officers perceive the organisation as operating in a decentralised manner in line with its degree of complexity.

Whereas the spatial dispersion of an organisation's facilities and personnel has been acknowledged as a work environment factor (Robbins, 1990; Steward, 1985), studies that have sought to investigate the ergonomics of office deployment in terms of communication efficiency are hard to come by. Of 89 recent studies on organisational design and management reviewed by Hendrick (1991), less than a quarter dealt specifically with issues of administration and management, with a significant number of these relating to office automation rather than allocation. The studies were carried out in twelve countries: the U.S.A., U.K., Canada, Japan, Australia, Germany, Sweden, Finland, Yugoslavia, India and Ivory Coast, with four of these countries (U.S.A., U.K., Canada and Japan) accounting for 90 per cent of these studies. To the author's knowledge, there is no published Zimbabwe study that has dealt with the issue of office allocation as it relates to organisational communication efficiency.

Method

Subject

Twenty Primary and Secondary Schools Education Officers varying with length of service and grades took part in the study. The mean length of service for the study sample was 8 years. Five of the twenty were District Education Officers based at the Masvingo Education Regional Offices. The sex ratio was 1 to 10 in favour of males. The twenty comprised of eighty percent Education Officers stationed at the Education Region Offices. Excluded from the study were Education Officers who, at the time of the data collection, were on leave or extended field work.

Instrument

Education Officers responded to a questionnaire covering various aspects of within department communications and related issues (see Appendix I). The questionnaire covered issues pertaining to location of offices and facility of communication with fellow Education Officers housed in the same or adjacent block of offices at New Government Offices on the one hand, and the education directorate and administrative staff at Wigley House on the other hand. The modes of communication considered were use of the telephone, access to official mail and the physical commuting to and from Wigley House. Officers also indicated their preferences of

location between New Government Offices and Wigley House and where it applied, were asked to give valutive statements on their reasons for desiring alternative office allocation. Thus, the study instrument covered not only the perceived communication efficiency and related impact on the quality of the work environment of the between block of office allocations. It also investigated the perceived communication convenience of the within blocks of offices reallocations at New Government Offices that accompanied the general offices redeployment.

Data Analysis

A chi-square with Yates' correction for continuity was the main statistical tool used in analysing the data. The level of confidence was set at .01 so that only the most stable differences could be isolated.

Results

Table 1 shows the distribution of responses to the question whether the recent reallocation of offices facilitated within organisation communication at various levels of office and staff from the point of view of Education Officers.

Table 1
Communication Pattern of Education Officers with
Clerical/ Administrative Staff and Directorate
(N = 20)

Level of Staff	Communication State	
	YES	NO
Professional Colleges	20% (4)	80% (16)
Clerical/administrative staff	-	100% (20)
Directorate	-	100% (20)

Eighty percent of Education Officers considered that the location of their offices did not enable efficient communication with fellow Education Officers housed in the same block of office ($\chi^2 = 7.27$, $df = 1$, $p < .01$). The Education Officers' offices are to an extent interspersed with those of the Culture, Non-formal and Schools Psychological Services Sections of the same Education department. There is unanimity amongst Education Officers that the present location of their offices does not promote ease of communication with the Education directorate and clerical staff at Wigley House. The perceived lack of communication convenience of the location of offices can be further explored by considering the extent of reported frequency of communication amongst the Education officers themselves, and between the Education Officers and the clerical staff and the directorate. Table 2 shows the breakdown of the relevant data.

Table 2
Frequency of Communication by Level of Staff
Done by Education Officers

Level of Staff	FREQUENCY OF COMMUNICATION		
	Once a day	2-5 times a day	Once a week
Professional Colleagues	20% (4)	70% (14)	10%(2)
Clerical Staff	30% (6)	60% (12)	10% (2)
Directorate	10% (2)	50% (10)	40% (8)

$$\chi^2 = 19.94, df = 4, p < .001$$

Whereas 20 percent of Education Officers reported that they communicate with each other once a day, 70 percent reported communicating with each other 2-5 times a day. Only 10 percent of the Education Officers reported communicating with each other once a week. With regard to communicating with the directorate, 10 percent of the Education Officers reported communicating with the Regional Director's office once a day, 50 percent 2-5 times a day and 40 percent once a week. Ten percent of the officers reported communicating with the clerical staff once a week, with 50 percent 2-5 times a day, and 30 percent once a day.

It would seem, therefore, that despite the perceived inconvenience of office dispersion, a significant number of Education Officers do liaise with each other, the directorate and clerical staff quite often ($\chi^2 = 19.94$, $df = 4$, $p < .001$).

Three modes of communicating with the Education directorate and clerical staff were considered in this study, namely official mail, use of telephone and individually meeting with the director at his office.

For contact by documents, attention was focused on the reported time it took for mail from the Education directorate to reach the Education Officers. A significant number of officers reported getting work related mail in two or more days ($\chi^2 = 14.77$, $df = 3$, $p < .001$).

Officers have very limited access to telephones averaging about 3 minutes per week. A significant number of officers walked to and from the higher level administrators fairly often ($\chi^2 = 14.77$, $df = 2$, $p < .01$), and spend an average of 30 minutes each per week moving between the two blocks of offices. Eighty percent of the officers preferred to be relocated either within the New Government Offices or to Wigley House.

A number of reasons were given for desiring relocation to the same office block with the directorate. Reasons of a structural-administrative nature included that:

1. It would ease communication with superiors and support staff and cut down loss of time spent moving up and down giving and getting information.

2. The flow of information within an effective management style should be as fast and regular as possible to avoid demotivating factors such as walking long distances.

A typical reason for desiring relocation within the present Education Offices block was that:

Ideally people performing related or the same type of work need to consult each other most of the time, thus their location should be one that maintains some closeness.

Some of the officers considered that the design characteristics of the New Government Offices as compared to Wigley House belittled their professional self-image. Amongst opinions of this nature was one that read:

These Offices (i.e. New Government Offices) are shackles in which a person called an officer should not be housed.

The physical commuting to and from the Education directorate was reported as exhausting and most inconvenient especially in bad weather. As one officer put it:

One goes there (to Wigley House) as need arises... which cannot be predicted, one may go to and fro 3 to 4 times on some days in very hot or very cold weather.

Amongst the issues collateral to the study that were raised included:

1. The support staff (i.e. Office Orderlies) will be gainfully employed when all officers are located in one building. Much of their time is spent walking between distantly located officers.
2. It is sometimes difficult to get in touch through phones with other colleagues in the districts or other regions.

A suggestion was also given that each officer be granted a direct telephone line.

Discussion And Conclusions

The study set out to investigate any communication handicaps consequent upon an adopted work space allocation arrangement. As such the study relates to what has been called the ergonomics of quality control and of the quality of the work environment (Stewart, 1985; Seabrook 1980, Blignaut, 1988).

The Education Service's work place allocation tends to be incompatible with the ergonomic principles of functionality, importance and frequency-of-use. To begin with, a significant number of Education Officers feel that their office locations are not functional for them in terms of facilitating efficient communication, either amongst themselves or with the Education directorate. Officers reported that they needed frequent use of and access to the important Regional Director's offices and needed to be housed in the same building as the Regional Director.

At least three implications follow from these observations. Firstly, organisational resources are likely to be spent on non-task relevant processes. For instance, the loss in man-hours spent on walking to and from the dispersed organisation's offices is enormous. With 20 officers spending an average of 30 minutes per week each moving between the two blocks of offices, that amounts to a loss of 10 man-hours per week. In practical terms that means a whole working day is lost per week and about one week per month. The officers are paid at an average of Z\$125 per working day. The time lost amounts to Z\$11 250 per month for 20 officers.

Secondly, timely decisions can be difficult to make under the existing office deployment arrangement due to the reported inefficiency of the modes of communication of the organisation. For example, whereas the Ministry of Education and Culture's Manual for Registry Users (1991:3) advises that "correspondence should be dealt with as expeditiously as possible within 48 hours", it actually takes just about the same period of time to get official correspondence from the Education Services' Registry to the Education Officers for actioning. This means that, ordinarily, it would take the department about 96 hours to finalize a matter of correspondence, which represents at least a 50 percent loss in efficiency. Under these conditions the dangers of deferring or even sitting on decisions are indeterminably multiplied.

Thirdly, work motivation may be adversely affected by having to spend a significant amount of time and effort on the mechanics of communication rather than the issues of decision making and implementing. It has already been noted that officers spend a significant amount of their work hours walking to and from the Administration offices, a set up the officers have described as both physically and emotionally exhausting. An important indirect consequent of the frustrating work space allocation and related communication problems could be the negative effects on the Education Officers' perception of the quality of the work environment. Since individuals attach symbolic value or meaning to the work environment in ways that express their own motives and needs (Blignaut, 1988), they may be less willing to participate in work environments that contradict their own opinions of themselves. As has been observed above, one officer commented that the Education Officers were housed in "shackles" that are unfit for "a person called an officer." Whilst human losses in terms of emotional frustration may be difficult to quantify in an objective manner, they have been found to be significantly related to work performance, job satisfaction, labour turnover and absenteeism (McCormick and Ilgen, 1989; Robbins, 1990).

Although the Education Service's work space allocation tends to be associated with considerable communication inefficiency, the same cannot, within the parametres of this study be said of the organisation's overall effectiveness. It is to be noted that Education Officers do communicate quite regularly with each other, the directorate and clerical staff. Implicit in this communication are obviously organisational goals and their achievement. What this study suggests is that the goals can be better achieved and with less wastage.

From another perspective, these findings could be indicative of the communications training needs of the organisation in at least two ways. Firstly, the ergonomically incompatible work space allocation may be reflective of the pre-existing poor communication between the Education Service's Administration and Education Officers' sections. There may not have been requisite consultations before the offices' re-deployment. As Urlings, Wijboer and Dul (1990) observe, any changes of a human-environment system that do not involve the people who are part of the very system is likely to be resisted, either due to lack of will or skills to make the reconstructed system work. In a way, the Education Officers' responses may be suggestive of resistance to changes about which they were not consulted. Secondly, it needs to be pointed out that Zimbabwe Education Officers are relatively highly qualified and experienced staff

with at least a graduate certificate in education and 10 years teaching experience. With that level of skill and the considerable work autonomy that Education Officers have, it is not unreasonable to expect these officers to require less frequent consultation with the Education directorate. AS Robbins (1991) observes, organisations with a high skill level tend to be considerably decentralised in structure and operation of offices. Education officers do not seem to perceive of the organisation as operating in a decentralised manner as would be expected of its level of complexity.

The findings of this study need to be considered within the context of its limitations, including that the study is post hoc. As such, there is no predating study on the ergonomics of the previous work space allocation of the Education Service organisation, with reference to communication efficiency, to serve as a basis for comparison. In addition, work space allocation is only one of several variables that have implications on an organisation's communication efficiency. Examples of other factors are the organisation's financial policies, available office space within a locality, its product line, technology and others. Future studies should explore all these variables in an interactional manner.

Recommendations

In order to improve the communications efficiency of the organisation, the education directorate may need to consider for adoption at least some of the following recommendations within the practical context of the organisation's operations.

The Education directorate needs to acquire a block of offices capable of housing all officers under one roof. Such a set up would afford the Education Officers ready access to consult with the directorate upon need. If that cannot be achieved, then there may be need at least to relocate the Education Officers to office accommodation less distant from the directorate's. Any subsequent relocation should attempt to locate offices by sectional function so that Primary and Secondary Education Officers, for example are housed in a close cluster of offices. The relocation and sectional office deployment may need to be discussed with the affected officers so that it gains general support from the start.

The present work space allocation obtaining, along with the reported restrictions on the use of the telephone, it may be expedient to allow officers more time on the telephone if the costs can be determined to be significantly less than those being incurred on man-hours lost walking to and from the Education Directorate.

Delays in the movement of mail necessitate a study into the work cycle at the organisation's registry with a view to eliminating problems that may be causing delays. If taken together with appropriate adjustments in the Office Orderlies' schedules of work, they may result in a more efficient movement of mail.

The frequency of reported need for consultations with the directorate in this case and related man-hour losses necessitate a further study on the nature as well as source of the communication needs that take such a significant proportion of the Education Officers' time. A training programme could then be designed to redress any identified communications systems needs.

Third world countries like Zimbabwe, that are grappling with problems of economic reform, including a tightening of public expenditure, could achieve their goals better by ensuring a maximum utilisation of manpower resources. Ergonomically sound organisation communication systems are one way of bringing the ideal of a more efficient civil service one step closer.

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APPENDIX 1

Work Space Allocation Questionnaire

Instructions

The questions below are part of a Study of work space allocation as it relates to organisation communication. The findings will be of value to planners and administrators in reaching work space use decisions. Your responses are confidential and will be used for the purposes of this research only.

Please tick option that applies

1. Does the location of your office enable ease of communication with:

- | | |
|--|--------|
| (a) Other professional Colleagues | YES/NO |
| (b) Higher level decision makers (e.g. DRDS, RD) | YES/NO |
| (c) Clerical/administrative staff | YES/NO |

2. How often do you liaise with:

(a) Other professional Colleagues:

- never
- once a day
- two-three times a day
- five or more times a day
- once a week

(b) higher level decision makers:

- never
- once a day
- Two-five times a day
- Once a week

(c) clerical/administrative Staff

- never
- once a day
- Two-five times a day
- Once a week

3. What is the mean time in which documentary, work related communication from higher level decision reaches you?
- under 2 hours
 - 2 - 4 hours
 - 5 - 8 hours
 - a day
 - 2 or more days
4. If you must consult with higher level decision makers for urgent decisions, do you
- (a) telephone them YES/NO
- (i) if YES, how often?
- once a day
 - two or more times a day
 - once a week
- (ii) Mean time spent on the telephone per week
- under 3 minutes
 - 5 - 10 minutes
 - 10 minutes or more
- (b) Walk to their offices? YES/NO
- (i) If YES, how often do you walk to consult with decision makers?

- once a day
- two or more times a day
- once a week

(ii) Mean time spent walking to and from the higher level decision makers

PER WEEK

- under ten minutes
- 11 -30 minutes
- 40 - 60 minutes
- 2 - 4 hours
- 5 hours or more

5. Would you rather have the location of your office remains as it is?

YES/NO

(i) If NO, where, amongst the following establishments would you prefer to be located?

- Block 4
- Block 3
- Wigley House

(ii) Why would you rather be relocated?

6. Any other related issues that in your opinion may assist this study:

7. Grade of Official: _____

Sex. _____ No. of Years on Grade _____

END



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